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United States Cast Iron Pipe and Foundry Company

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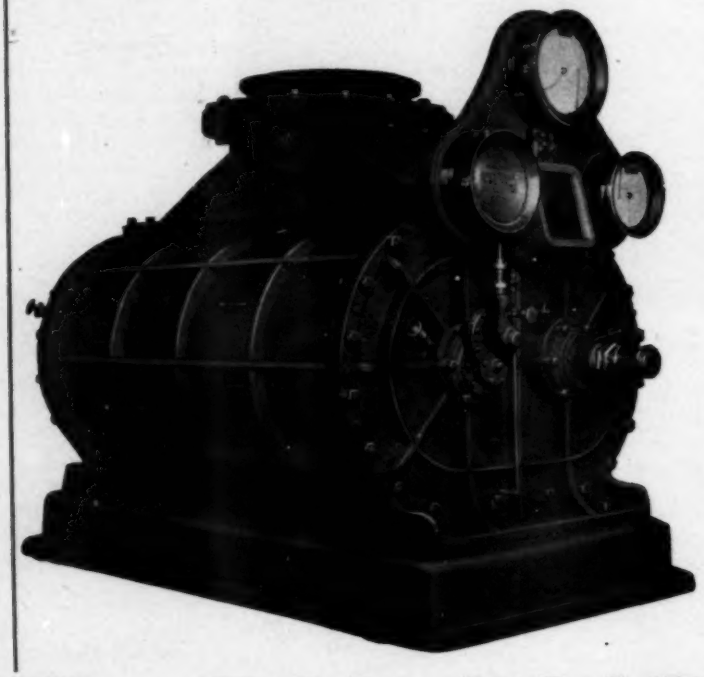

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CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

AMERICAN
GAS JOURNAL

Vol. 121. No. 6 NEW YORK, AUGUST 9, 1924 Whole No. 3474

*Is Industrial Gas Business Prohibitive Because the Rates are Too High?

A. B. Greenleaf

Introduction

THE subjects to be included in this series are as follows:

No. 1. "Is the Industrial Gas Business Prohibitive Because the Rates Are Too High?"
No. 2. "Is the Industrial Gas Business Prohibitive Because of an Incompetent Sales Personnel?"
No. 3. "Is the Industrial Gas Business Prohibitive Because of the 'Peaks'?"
No. 4. "Is the Industrial Gas Business Prohibitive Because of an Inadequate Distribution System?"
No. 5. "Is the Industrial Gas Business Prohibitive Because the Gas Business Is On the Decline?"
No. 6. "Is the Industrial Gas Business Prohibitive?" (Conclusion.)

How These Articles Were Written

Our magazines, these days, contain much about the wholesale marketing of manufactured gas. Scarcely a trade periodical can be found that does not not tell of some new application of gas on a gigantic scale. There are furnaces here and there, consuming more gas than the individual loads of many small cities.

Potential

However, it is amazing to find that there are many places throughout the United States where the local gas companies have done little or nothing in the way of securing their wholesale load. The fact remains that millions of tons of coal as well as enormous quantities of oil and other "crude" fuels are being used where gas should be used and to the distinct advantage of the user. Figuratively speaking, this business is awaiting the industrial gas sales engineer.

An Unfair Advantage

Fortunately, many aggressive gas companies are enjoying a considerable industrial gas load. They have found, and know, it to be quite profitable. Unfortunately, gas companies that have not investigated this field are in the majority. Much has been said and written about these companies. Quite naturally you will ask, "Why worry?"—"It's their business."—"If they don't want it, why, they don't want it."

A Bad Effect

This attitude is a gross injustice to the entire gas fraternity. Greater results can be obtained only when the combined efforts of every one interested in the gas business is exerted. A manufacturer located in a large city recently said that he experienced great difficulty in securing any kind of service or assistance from the local gas companies in the smaller cities where his branches were located. He said that they didn't seem to want the business. This story, true as it is, is not unusual.

An Analysis

Three men were recently sent out into a certain state to canvass every gas property of any size. These three men chose separate paths. Their missions were to ascertain just why so much attractive wholesale gas business was shunned by the local gas companies. In the course of their visits with scores of managements, they cleverly reached the very root of the trouble and pinned down the so-called "big" reason why the wholesale load was, supposedly, "undesirable."

The Answers

The three men returned. Their results were tabulated and found, principally, to be about the same everywhere they had been. These "imagianry" objections are the subjects of these series of articles. It is hoped that the text will obviously point out the fallacy that the industrial load is not a desirable business.

*This is the first of a series of articles attempting to correct the popular impression that the industrial gas business is not to be desired.

"Is Industrial Gas Business Prohibitive Because the Rates Are Too High?"

"Our rates are too high"; "We can't go after the industrial business"; "Our rates are way too high," are the usual statements made by gas companies not enjoying wholesale loads. There are two answers to these objections; both vividly point out their fallacy.

An Analysis

First of all, if the rates are too high (which they are, in many cases), the thing to do is to lower them; secondly, there are certain classes of wholesale business that are yours even if the rates were doubled or trebled. For the sake of clarity let us dwell on these two points individually, one at a time.

The Basis

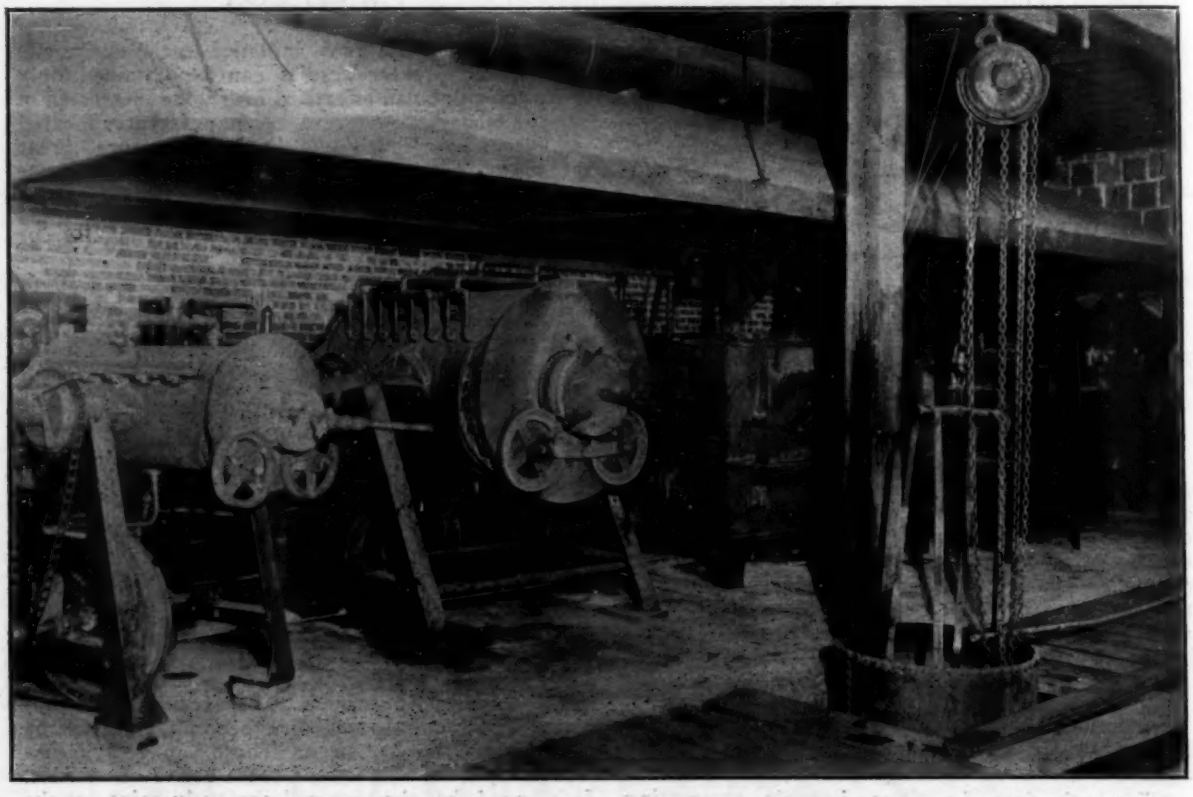
If it is impossible to attract a wholesale business because the rates are too high, the logical thing to do is to lower them. Some say that the state utility governing bodies will not permit the changing of rates. Let it be remembered that these governing bodies do not make the rates; they approve them. They, further, assure the gas companies' stockholders of a reasonable rate of return on their money so invested. In other words, the public utilities must sell gas at a rate that will reasonably assure the stockholders of a fair return on their money, which, in turn, is only fair and square to both the customers and the investors.

Fundamentals

This "reasonable rate of return" is definitely fixed at a maximum and can not be exceeded in the event any economies are effected in the production of the gas. Therefore, if it should so happen that the gas could be manufactured for less money, regardless of what that reason might be, the saving thus effected would of necessity have to go to the customers in the form of lower rates.

Profits

A gas company's domestic load keeps the equipment busy only 18 per cent of the time. How much more money would the stockholders have to invest in the properties, should the operating time be increased from four and one-half to twenty-four hours per day? The answer is obvious: none. Increased production does two things: It decreases unit costs and increases the rate of return on the investment.



Firms in Chicago Who Require Metals Chiefly in the Manufacture of Their Products, Required Over One and a Half Billion Cubic Feet of Gas Per Year

This manufacturing economy on one hand and additional earning power on the other combine to form a most excellent avenue for the reduction of rates.

An Illustration

Take, for example, a small property valued at approximately one million dollars. Statistics prove that this million dollars is actually being used only four and one-half hours per day, during which time it is supplying gas for purely domestic purposes. Suppose this four and one-half hours was increased to nine hours, due to the annexation of an industrial load. In all probability the investment would not have to be increased one iota. Unit production costs would be found to be materially reduced. Naturally, the return on the investment will be doubled. Now, bear in mind that the return on the customer's money invested remains constant. Therefore, the additional earnings due to lower costs and the increased earnings due to increased "turn-over" are automatically diverted to the reduction of the rates charged for the gas!

Hand in Hand

Now, it becomes apparent that these two items, namely, the industrial load and lower gas rates, are, which might have been thought at the outset "antagonistic," closely allied. Lower rates (all other things remaining constant) can only be had where a wholesale load is obtained, and vice versa, a wholesale load can more easily be procured where the rate is made attractive to the manufacturers using heat in their processes. Consequently, this is the fallacy in the statement frequently made where no attempt has ever been made to secure an industrial load.

Various Rates—Same Gas

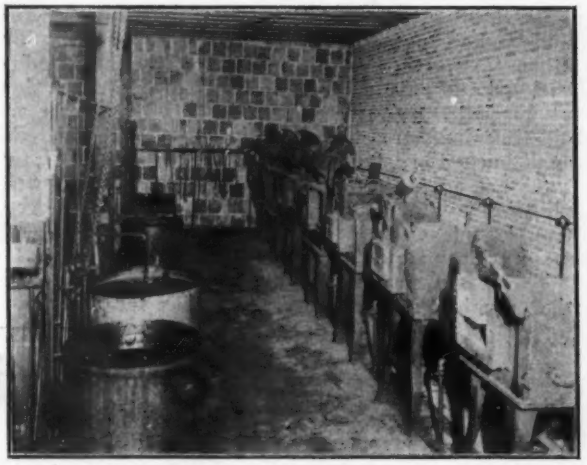
We all know that there are certain "fixed" charges in the operation of a gas plant and the selling of the product. Regardless of whether a plant is doing a small business or a very pretentious one, there are certain costs to be taken into consideration and must be accounted for in the price paid for gas by the customer. All the gas companies in the State of Illinois, for example, abide by the same regulations laid down and approved by the utility commission. Nevertheless, in Illinois the price varies from 60 cents, or thereabouts, to $2 or $3 per thousand cubic feet for identically the same gas.

The Secret

The stockholders in either case receive approximately the same dividends. Why is there this great difference in price? Simply because the company offering the lower rate is selling a far greater amount of gas per each 100 accounts than the company forced to charge the higher rates. Obviously, then, in order to sell gas at lower rates, a greater amount must be sold, and the quickest way to reach this end is surely in wholesale loads.

Other Excuses

These arguments, so far, have not taken into consieration the predicament of the company that is physically unable to increase its capacity with its existing equipment. There are cases on record where local gas companies have been offered large industrial accounts, only to have to turn them down, due to the fact that their production facilities were not adequate. In some cases it is the dilemma of not having holder capacity; in other cases it is distribution difficulties. Regardless of what the trouble may



Section in a Modern Gas-Fired Steel Treating Shop

be, the one sure remedy is additional financing. If this is the case, and more capital is necessary, there certainly is no quicker way of raising it than through the prospectus of securing wholesale loads. These subjects, however, will be treated more fully in a subsequent paper of this series.

"Peaks"

Another predicament often cited is "peak" loads. This subject also will be spoken of a little later on. Suffice it to say at this point that a survey of the gas business will prove that in the majority of cases the rates could be materially reduced if the potential industrial or wholesale loads were annexed, and it would be, in many instances, without the necessity of interesting additional capital.

An "Alibi"

It is feared that this far-too-popular reason, that "no attempt is made to get the industrial business because the rates are too high," is merely an "alibi." In the cities offering the cheapest rates the industrial gas sales engineer hears the potential gas customer tell the same story. Right at the outset the potential gas customer who has never used gas is firmly convinced that, regardless of what the price of gas may be, it is too high. That is the first thing they say. It is not within the province of this article to dwell on how this sales resistance is combated. That

fact that more than 82 billion cubic feet of gas was consumed by wholesale users last year during a period of particularly cheap oil prices is pretty good testimony that thousands upon thousands of manufacturers have found that the price of gas is not too high.

An Open Sesame

Too many people think that low rates are the only solution and that they will act as a cure for all ills. Such is not the case. The industrial gas business is in an educational stage. We have just passed the period where nearly all the old traditions of the gas business were wiped away. The smoke has been cleared, all the mysticism has been done away with and we are beginning to get people to listen to our story. Nevertheless, a tremendous amount of educational and research work awaits to be done. Gas at 10 cents per thousand cubic feet burned in an old-time inefficient furnace is far costlier than gas at $1 burned in a modern up-to-date appliance. Low rates are essential, but scientific and intelligent application is imperative. Low rates will not solve the trouble unless the industrial user applies the gas in a scientific manner.

There is a certain amount of the wholesale load that can be procured regardless of what the rates may be. Much has been written about this subject and many of the companies have saturated these possibilities. Nevertheless, it is undeniable that a far greater amount of the industrial business will be secured when the rates compare somewhere within reason with other fuels.

"Tried and True"

Domestic gas rates in Chicago have been reduced from $1.15 per thousand cubic feet to 85c, in the face of rising costs, during the past two or three years. The industrial load has well contributed towards making this possible. The new industrial rates are based on "Output" and "Demand" charges, which bring them down to between 70c and 75c per thousand cubic feet. Other companies have made similar reductions. There is no reason why all other gas companies can not do the same. The industrial business is unquestionably the "key" to the situation.

Clearly a Fallacy

In conclusion, let it be remembered that the statement that "Industrial business is unobtainable because the rates are too high" is in every sense a fallacy. The very nature of the industrial business tends to reduce rates. The one hope of gas companies today to reduce rates is the industrial load.

Gas a la Petite

Nan's Kitchen in Devil's Alley, Boston, is a fine example of what can be done with the Universal Fuel

Edward J. Cooney

Sales Manager Lowell Gas Light Company, Lowell, Massachusetts

ONE of the cutest, most efficient little restaurants in New England is "Nan's Kitchen," in Devil's Alley, Oxford Terrace, Boston.

The proprietress, the originator of the idea, is Nan Gurney, who is known all over New England as "Nan."

A sight-seeing trip around Boston is not complete unless one visits "Nan's Kitchen" and eats one of her justly famous chicken dinners.

Nan serves just one thing—a chicken dinner. This dinner is complete, however, and very palatable. For instance, when you are eating one of Nan's dinners you get all the waffles that you can comfortably stow away, and I might add that when you eat one of Nan's waffles you will put in repeat orders.

Then, again, in "Nan's Kitchen" the waitresses have the daintiest little blue bloomered costumes that appeal both to the imagination and to the eye. These costumes enclose very attractive girls, a fact that makes one's mind receptive for an appetizing menu.

In the Kitchen are the nicest little benches and hide-away corners, where people mutually interested in each other may, while eating, pass the time most pleasantly. The tables are all of mission finish. On the walls are the homeliest little poems. When you read one, you are just bound to look around and read the others.

If you want to get service in "Nan's Kitchen," especially evenings, holidays or Sundays, you must order your place several days in advance. Otherwise you are most sure to find when you enter that all seats are taken for several hours.

Those in the know have long since learned to 'phone Nan for reservations.

An All Gas Kitchen

By this time you may be wondering what all this has got to do with the gas business. That is where we must let the secret out. All the cooking in "Nan's Kitchen" is done in two little alcoves, each about six feet wide and four or five feet deep, with all gas equipment. Nothing is served in Nan's Kitchen that is not cooked or heated by gas flame.

The gas men of New England, out of a sense of loyalty to the industry they represent, always think of Nan's Kitchen when they want a hearty repast in a cozy corner.

Nan's Kitchen is one of the best advertisements for all gas use that there is in New England and perhaps in the United States.

If Nan can make this pay in Boston, why can't other Nans make the same kind of a kitchen pay in other cities? Here's a thought for the gas sales manager to pass along to some wide-awake business woman whose aim is to accumulate a little fortune of her own.

Bottom of Depression Reached

Sudden change for better very likely—emergency may tax seriously nation's financial resources

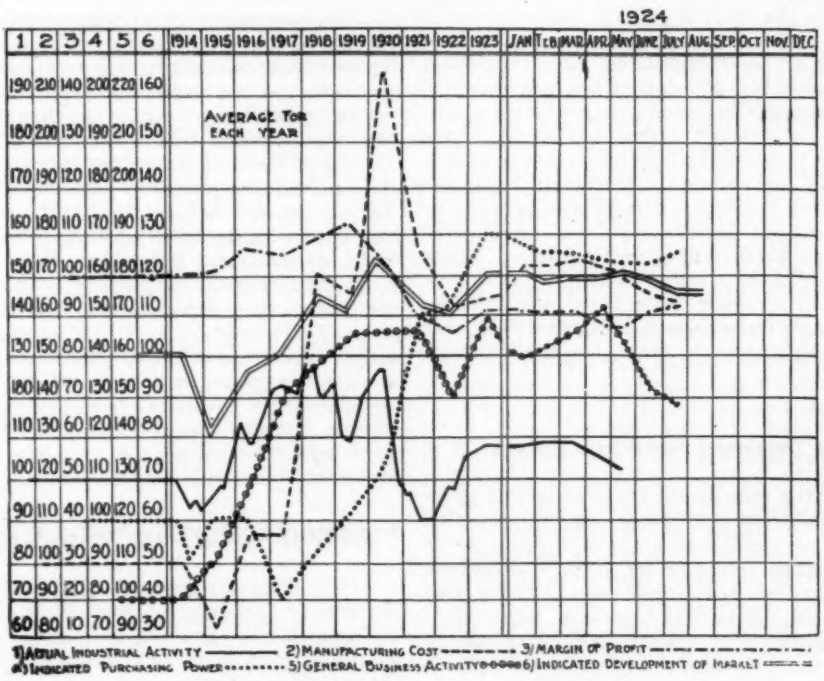
L. W. Allwyn-Schmidt

FOR the first time in the recent history of the market signs have appeared indicating the early end of the economic depression which has characterized the business activities of the nation since the end of last year's high wave of prosperity. The bottom of the wave apparently has been reached and the waters are flattening out, collecting strength for the new upward movement. In the face even of further decline in production figures we are inclined to predict an early readjustment of all fundamental factors and a reawakening of industrial activity all over the country.

July brought its usual summer dullness and the chances are that August will not show any marked improvement. But it would be wrong to estimate the carrying strength of the market exclusively upon such evidence as appears upon the surface. The American market is still very largely an agricultural market. This, notwithstanding the fact that we are one of the largest, if not the largest, manufacturing nation of the world. So, while industrial prosperity has its bearing upon national market activity, it is after all the farming community and its well-being which provides the stimulus required for its healthy growth. To the farming community, therefore, we must turn for enlightenment as to the future development of the nation's business.

The Farm Situation

With the coming of August the Western and Southern farmers will be able to form an estimate of the possible earnings from their crops. These crops will be gathered within the next few weeks and their marketing will begin. Financial activity, therefore, must show itself first in the immediate neighborhood of the farming centers. It will strike the small cities and will slowly move East and North, following the movement of the crops to the centers of consumption. At the same time manufactured merchandise will start to flow to the farming centers. The size of the movement will depend upon two factors: the quantity of the crop and the price. As the farming communities pay for their purchases practically exclusively with their crops, the volume of the crop movement is of considerable importance to the manufacturer if his profits are not sufficiently


1924
1 2 3 4 5 6
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923
JAN FEB MAR APR MAY JUNE JULY AUG SEP OCT NOV DEC
AVERAGE FOR EACH YEAR
1) ACTUAL INDUSTRIAL ACTIVITY
2) MANUFACTURING COST
3) MARGIN OF PROFIT
4) INDICATED PURCHASING POWER
5) GENERAL BUSINESS ACTIVITY
6) INDICATED DEVELOPMENT OF MARKET

large so as to leave in his hands a margin to take care not only of his most immediate needs, but also to leave something to spare for so-called luxuries.

Judging from the reports from the farming centers, it appears that the crops will be satisfactory. Prices appear to be high enough to secure a profit, especially as the purchasing value of the dollar for industrial products is again on the increase.

Movement of the Crops

Much will depend now upon the ability of the country to pay for the crop, to move and to consume it. There have been years where lack of ready cash has seriously impaired the value of the crop movement for our national market. This year, however, the nation seems to be exceptionally well prepared to take care of the business of financing the crop. Banks have accumulated during the last months large funds which can be made available for any desired purpose. In fact, it is said that the banks will very much welcome an opportunity for getting the cash resting in their treasuries into circulation. Owing to the industrial depression the movement of industrial merchandise has been small, requiring only little financing. The money remained in the banks and it will come very handy for the crop movement. The cash paid to the farmers in turn will be at the disposal of country bankers. It will take care of the requirements of local dealers who will be enabled to finance their merchandise transactions. These transactions should be rather heavy because the farming communities have been very much understocked all through the summer and will want great quantities of merchandise to take care even of normal requirements.

What Has Delayed Prosperity's Return

With many of the indications for a return of prosperity clearly visible, it is to be wondered why this prosperity has not come much earlier. An answer can readily be found. The present state of economic stagnation has had no real foundation. There was no general, but only a partial economic depression. The building industry has been active. The luxury industries like the perfumery industry have done well. Individual earnings have remained upon comparative high levels. Money has been plentiful and easy. Nevertheless, there has been a slowing down in the manufacturing industries. Banks have been slow in making industrial loans. Railroad loadings have been behind the usual figures. The steel industry is seriously flopping and last, but not least, merchants and manufacturers alike are complaining about slow collections.

Making What Is Expected Come True

Somehow the nation appears to have made up its mind that business would be slow during the present year and, having once adopted this point of view, it proceeded to make sure of its presentiment by simulating all the outward signs of an economic depression. Where there was reason merely for caution, over-cautiousness appeared and what might have been a passing flurry just failed to be turned into a real crisis, by the fact that even the most susceptible market can not be depressed permanently by a mere attack of nerves.

Sudden Change to Be Expected

If the present condition of the market with its outward appearance of an economic depression is largely a state of mind, it follows that the market being fundamentally sound, this state of mind may just as rapidly turn to a more cheerful appraisal of the situation. A sudden change, therefore, is not only likely, but practically certain, and, with conditions being what they are, this change can not be deferred very much longer.

This possibility of a sudden change to the better should be seriously considered by manufacturer, dealer and financier alike. Its coming will put unusual pressure on the much depleted retail stocks of the country, resulting in an increased and sudden demand for merchandise that might easily overtax the facilities of the manufacturing industries and railroads. It may call for financial assistance in the manufacturing centers before the money now collected by the banks in the farming centers can be made available for industrial financing.

Unpreparedness for prosperity in such a case might be just as disastrous as unpreparedness against adversity. It is to be hoped that the great and exceptional resources of the nation will be handled wisely in this emergency, which we will have to meet sooner or later.

PUBLIC UTILITIES AND LIFE INSURANCE

Haley Fiske, president of the Metropolitan Life Insurance Company of New York, in a speech said:

"Legislation and supervising commissions have borne hardly upon public utility companies. Millions of the securities of these companies are held by life insurance companies and it is your business to see that your policy-holders realize that unjust legislation or supervisory regulation are attacks upon them and their pocketbooks. If the demagogues could be brought to the conviction that attacks upon railroad and public utility corporations are not attacks upon bodies which are inanimate corporations, but upon the pockets of the people of this country, they would stop." Such a statement coming from such a source will bear thinking and action. While it was directed to his agents, it applies to every policy-holder in the country, yea to the foundation upon which all business rests. Few blacksmiths are lawyers, nor is every man capable of directing the welfare of a public utility.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 32

Expansion Effect of Heat (continued)

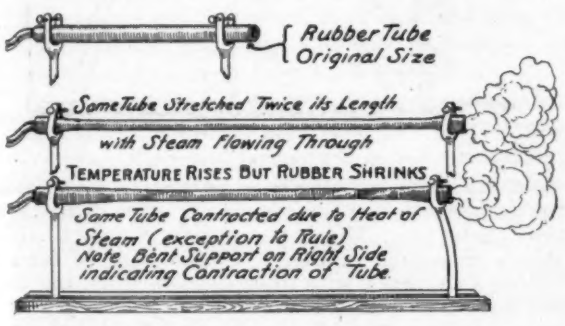
Experiment with Rubber Tubing

Another interesting exception to the rule is a piece of rubber tubing which has been stretched to about twice its ordinary length. When steam is passed through the tube, its temperature is raised, but in place of expanding further it contracts considerably. This is due to the fact that though the coefficient of linear expansion parallel to the length of the tube is negative, and the volume of the tube increases, which indicates that the coefficient of expansion at right angles to the tube is positive. Hence under these conditions rubber has two different rates of expansion.

The Expansion of Liquids

In the case of liquids, and this condition applies to gases as well, the only expansion that can take place is volumetric expansion. There is no such thing as the linear expansion of a liquid, for the simple reason that on exposure to heat the dimensions of the liquid mass, which is determined of course by the dimensions of the vessel in which it is contained, are increased in all directions. All liquids, with the single exception of water, expand as the temperature increases; in other words, the coefficient of expansion is always a positive number. Furthermore, the degree of expansion is always greater than that of solids. Liquids, just like solids, possess characteristic coefficients of expansion, and the following table gives some of the more important liquids and their corresponding expansion coefficients:

HEAT CAUSES SOME SOLIDS TO CONTRACT


Rubber Tube
Original Size
Same Tube Stretched Twice its Length
with Steam Flowing Through
TEMPERATURE RISES BUT RUBBER SHRINKS
Same Tube Contracted due to Heat of
Steam (exception to Rule)
Note Bent Support on Right Side
indicating Contraction of Tube

Coefficient of Cubical Expansion of Liquids

Substance	$a \times 10^2$	Temperature range degrees F.
Alcohol (methyl)	0.0796	from 36 to 158
Benzene	0.0770	from 32 to 178
Bromine	0.0649	from 19 to 140
Calcium chloride 5.7%	0.0281	from 64 to 77
Calcium chloride 40.9%	0.0283	from 63 to 75
Ether	0.1195	from 5 to 100
Hydrochloric acid, 50% water	0.0519	from 32 to 86
Mercury	0.0099	
Olive oil	0.0412	
Phenol	0.0500	from 94 to 314
Petroleum, 0.8467 specific gravity	0.0577	from 75 to 248
Sodium chloride, 1.6%	0.0593	
Sulphuric acid .....0.0272 to	0.0444	from 32 to 86

Calculation of Change in Volume of Liquid

The formula that is used to determine the change in volume that takes place in a liquid due to the rise in its temperature is written as follows:

$$V_t = V_o (1 + a_v t).$$

In this formula V_t is the volume at the new temperature, V_o is the volume at the original temperature, a_v is the coefficient of cubical expansion and t is the temperature differential.

Then, for example, if mercury is subjected to a temperature change from 50 to 150 degrees F., in other words, 100 degrees, and if the original volume was one cubic foot, then the new volume will be found as follows, using a_v from the above table, as 0.0099×10^2, or 0.000099.

$$V_t = 1 \times (1 + 0.000099 \times 100)$$
$$= 1 \times (1 + 0.0099) = 1 \times 1.0099 = 1.0099 \text{ cu. ft.}$$

The following table gives a comparison between the increase in volume that takes place in a number of liquids when the temperature increases 180 degrees F. from 32 degrees F. to 212 degrees F., the volume at the lower temperature being considered as unity:

Water	1.0466
Water saturated with salt	1.05
Mercury	1.0182
Alcohol, ethyl	1.11
Nitric acid	1.11
Olive and linseed oils	1.08
Turpentine and ether	1.07
Hydrochloric acid and sulphuric acid	1.06

Dry Cooling of Coke

Some further notes on the Sulzer system at Rotterdam

Major Johnstone-Taylor

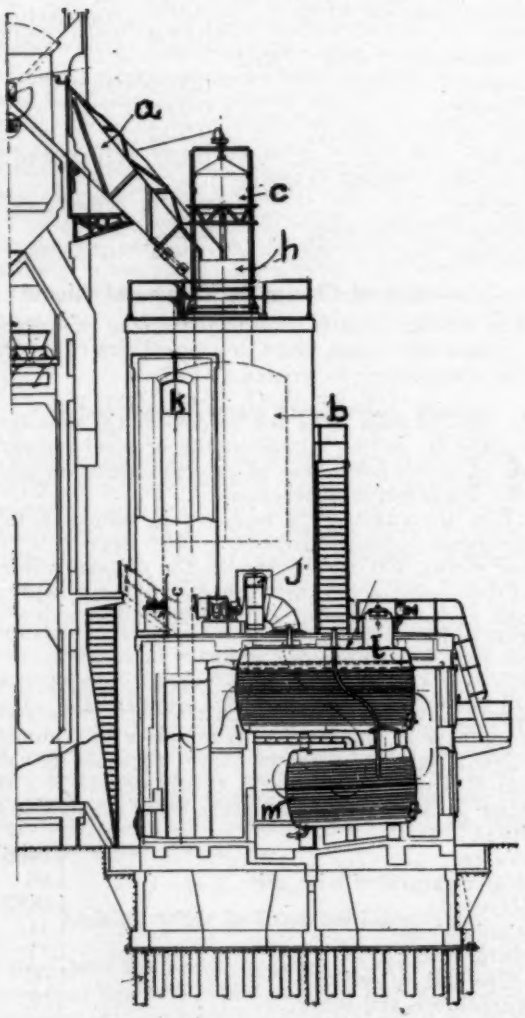
IT MUST be admitted that the system whereby coke is either immersed in or sprayed with water is wasteful and has several drawbacks from the gas engineer's point of view. Moreover, it is somewhat destructive to the coke, which tends to be both wet and dusty.

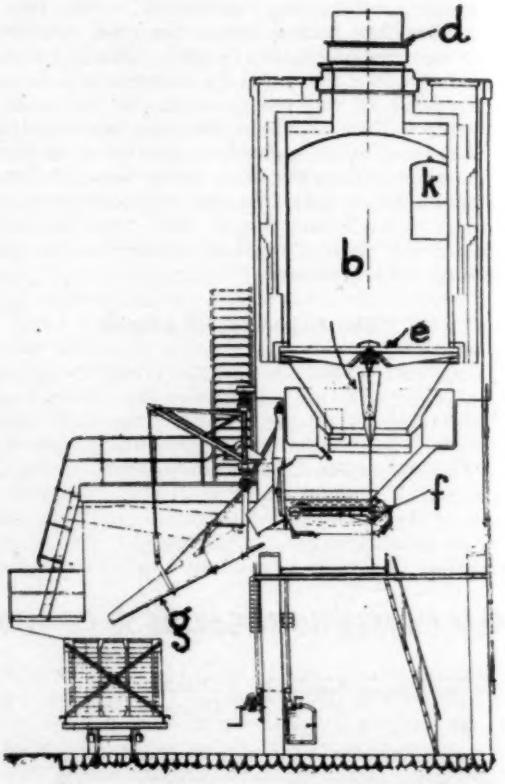
The dry cooling system, which of late has been developed in Europe by Sulzers, is now becoming quite general in European gas practice, there being no doubt about its overcoming the shortcomings of the wet system, while it has the advantage of providing quite an appreciable amount of heat which may be usefully employed.

Description of Plant

The arrangement of the plant in its modern form is illustrated in the diagrams numbered 1 and 2.

In Fig. 1 that part of the structure at the extreme





right is a portion of the existing wet cooling plant, the coal hoist which is made use of. This discharges into chute (a). The coke cooling chamber (b), shown in section in Fig. 2, is also built of ferro-concerte and lined with firebrick, and when the top and bottom openings are closed it is completely air tight. It is rectangular in shape and the bell (c), which is shown in Fig. 1 in its raised position, closes down on a water seal (d), when the chamber is charged. The discharging door (e) is arranged with guiding bars which regulate the descent of the mass and prevent its sticking, while chain bed (f), operated by a motor-driven worm gear, serves to transfer the coke to chute (g).

As The Journal Views It

THE INDUSTRIAL GAS BUSINESS

In this issue of the American Gas Journal there commences a series which will discuss the Industrial Gas Business from what may be called a slightly different angle than has hitherto been used. The articles are written by Mr. A. B. Greenleaf, who is well known for his work in the industrial gas field.

The purpose of these articles is to answer the contention that gas is prohibitive as an industrial fuel. The gas business is rather peculiar in that, under certain conditions, it has to refuse to accept business. In an ordinary industry such a state of affairs is, to say the least, very unusual. However, gas companies have been in the habit of refusing business for various reasons which have appeared to be self-sufficient to them, and which may, under certain conditions, have actually been conclusive. The gas business in this respect is quite different from an ordinary industrial enterprise.

It is a fact, then, that development of business in the industrial gas field has suffered considerably because the gas company did not either want the gas business or could not afford to take it, when the desire to take it was very strong. The reasons for refusing the business have been many.

Mr. Greenleaf has succeeded in narrowing them down to five, namely: high rate, incompetent sales personnel, the peak, inadequate distribution system and that contention of dissatisfied and discouraged gas men, "The gas business is on the decline." He will take each of these up in detail and show how fallacious they all are. In the article that is published in this issue he analyzes the first reason, namely, that the rates are too high.

Perhaps the most potent statement made is that "if the rates are too high, lower them." On the other hand, to many gas men this appears to be a rather drastic, if not a foolish way to look at the situation. If, however, the gas man will read further, we feel confident that he will see that there are many reasons why such a bold statement is not as illogical as it looks.

The man who sells gas for industrial purposes must remember that no matter what deduction is made in the gas rate, the price of gas fuel cannot come to a point where it will be as cheap as that of coal. He must not try to sell his fuel on the price basis only. On the other hand, there is no reason why, if it is possible to do so, the price should not be reduced. In fact, it has been pointed out by Mr. Greenleaf, that when the price of gas becomes too high, state regulatory bodies see to it that it is reduced.

The industrial gas salesman must remember that he is selling a superior fuel and the gas company must also realize that it is manufacturing a superior fuel. If the rate is reasonable and it can be made so, then the fact that greater advantages are gained by the use of this fuel will encourage the manufacturer to use it, and after once using it he will learn from practical experience what gas service means and what benefits he can derive from gas that is not possible to get with other fuels.

Then he will not only be glad to use gas, but will fight strongly against anybody taking it away from him. This is the experience of many companies who have sold gas for use in industrial manufacturing processes. You cannot help having to meet the condition that the manufacturer is sceptical, for it is a new thing for him to use gas. His scepticism must be overcome; once overcome, he will be a friend for life to the gas man.

In concluding his article, Mr. Greenleaf definitely states that the reason for not going after gas business, to wit: that industrial gas business is unobtainable because gas rates are too high is a fallacy in every sense of the word. He points out conclusively that the industrial gas load will actually be a determinative factor in tending to reduce the gas rate.

Thus literally we have the cart before the horse. The gas company must not consider industrial gas business as impossible because of the rates, but should get the business in spite of the rates, so as to make possible reduction in rates.

Industrial gas business can be obtained even though the rates are higher than that of the other fuels that are used in industry. Perhaps this is the way it is necessary to start the industrial gas department. And it can be done, for it has been done in the past. Then, after large volume business has been obtained, due to the fact that gas plants will be operating its equipment to full capacity, instead of reduced capacity, the returns will be larger on the investment, and as law fixes what this percentage of return should be, the excess, after other items have been taken care of, can be counterbalanced by a reduction in the gas rates.

In this way we have what might be called an endless chain. Each large addition to the industrial load makes it possible to consider a further reduction in the gas rate, with the final result that the gas rate will be reduced to such point that the price factor will no longer hold out terrors to the gas company or the industrial gas salesman in going after industrial business.

COMPLETE COMBUSTION OF GAS IN THE RANGE

A well designed range, whether it be of the open or solid top type, provides for the complete combustion of gas. This is essential in the use of gas in a gas range and should be one basis on which to criticise any gas appliance. If there are provided arrangements in the solid top type whereby the gas is entirely consumed, it makes no difference what other features may be combined with the device, as far as danger from incomplete combustion of gas is concerned. That device is perfectly safe from that standpoint.

However, when appliances are designed without taking into due consideration the fact that gas, when incompletely burned, sends out fumes which are dangerous because of their poisonous nature, then criticism is well deserved. Nevertheless, it often happens that such criticism is directed against appliances in which care is expressly taken to provide against incomplete combustion. Sometimes the devices that are used to secure complete combustion are not apparent on the surface and the appliance requires study to show that it is perfectly safe. The consumer can always rest assured that any gas appliance manufacturer, possessed of standing in the industry, will not urge him to use an appliance with gas as a fuel which would be dangerous to him, for in the long run this would reflect discredit not only on the appliance manufacturer, but on the gas industry as a whole.

GOVERNMENT CONTROL OF BUSINESS MEANS INDUSTRIAL GOOSE STEP, SAYS LABOR MAN

The steady increase of governmental interference in American industries, together with the tendency toward bureaucratic control and the mounting costs to the taxpayer of such administration and regulation have reached a point where American business must soon decide whether it is to adopt a policy of state bureaucracy or whether it is to stand on its own feet, declares Chester M. Wright, of the American Federation of Labor.

There is already one government employee for every twenty-three inhabitants, and the present trend is toward still further additions to the machinery of government," says Mr. Wright.

"It is not so much what we have that need concern us as it is the trend of things. If we follow the trend we shall land in a jumbled heap of paternalistic, repressive, coercive, back-breaking, heart-breaking machinery. The trend leads toward an industrial goose-step as surely as fish begets fish.

The Functions of Government and Industry

"The prime function of industry is to do things. The prime function of government is to guarantee rights," declares Mr. Wright, who sees a sharp line of cleavage between the necessary protection of rights by the government and the hectoring of industry by eevr-increasing legislation.

"The emotionalists and the intelligentsia all flock to the banner of state domination. They are all for rushing ahead into state operation of all kinds. They are for putting the government into more business. There never was a time when there were so many dogmas and isms, so many sects and insects, so many propagandists. Some are more drastic and poisonous, more crazy and destructive than others, but they have at least one common denomination, and that is: more power to the state.

"Do we follow the holiday banners of those who have many banners and much emotion, but little knowledge, little comprehension, and mostly not much responsibility? Or do we stick to the underlying philosophy of American life, recognizing that we live in an industrial age which, if it can go forward normally, will make life better, but which, if tampered with too much, if thwarted by 'verboten' signs too generously sprinkled around, may engulf itself and all about it?

"There is a clear road, but it is not a short one. It is merely a case of natural, evolutionary development. What the state domination folks would do is to thwart this evolutionary development.

"There never was a time when humanity had it so within its power to shape the future, or to give natural forces a chance to develop naturally."

Catechism of Central Station Gas Engineering in the United States

Installment No. 32

(Continued from last week)

Action of Inner Section of Telescope Holder

The action of the inner section is similar to that of a single lift holder. When this section is completely filled with gas the cup filled with water engages the grip of the next section, and as gas continues to flow into the holder, raises this section, the water in the cup forming a seal which prevents the escape of any gas. When the holder descends after both sections have been raised, the outer section lands on the bottom, and the inner section continuing to go down, the cup and grip separate, and the action is again that of a single lift holder.

The cups of telescopic holders are guided by wheels bearing against plates riveted on the sides of the outer sections, the grips of the outer sections are guided by wheels bearing against the guide framing, the height of which is usually made equal to the combined height of all the sections, and the curb of the outermost section is guided by wheels bearing on rails or plates fastened to the tank wall.

The capacity of a two lift telescopic holder is double that of a single lift holder of the same diameter, that of a three lift three times that of a single lift, and so on.

Water Required in Holder

175. The inner section of a two-lift gas holder has a diameter of 87 ft. and a height of 20 ft., and the outer section has the same height and a diameter of 89 ft. The cup is 16 in. deep. The holder is contained in a brick tank 91 ft. in diameter and 21 ft. deep from water line to bottom. In the tank is a "cone" which has a height of 15 ft., a diameter of 30 ft. at the top and one of 81 ft. at the bottom. How many gallons of water will be required to fill the tank to the water line and what will be the working capacity of the holder in cubic feet? Give your calculations.

Ans. The volume of the space in the holder tank which will be occupied by water is equal to the difference between the volume of a cylinder, having a diameter equal to that of the tank and a height equal to the height of the tank from the bottom up to the water line, and the volume of a frustrum of a cone of the dimensions of the "cone" in the tank. The volume of a cylinder is equal to the product obtained by multiplying the area of the base by the height. A circle 91 ft. in diameter has an area of 6503.9 sq. ft. The distance, from the bottom of the tank to the water line is 21 ft., so the volume of the cylinder formed by the tank is $6503.9 \times 21 = 136{,}581.9$ cu. ft. The volume of a frustrum of a cone is equal to the product obtained by multiplying the sum of the areas of the two bases and of a mean proportional between these two bases by one-third the altitude. In this particular case the lower base of the cone has a diameter of 81 ft. and an area of 5,153 sq. ft., and the upper base has a diameter of 30 ft. and an area of 706.9 sq. ft. The mean proportional between these areas is therefore $\sqrt{706.9 \times 5153} = 1908.5$, and the sum of the two areas and this mean proportional is 7768.4 sq. ft. The altitude of the frustrum is 15 ft., hence the volume is $7768.4 \times 5 = 38{,}842$ cu. ft. To fill the tank to the water line will require $136{,}581.9 - 38{,}842 = 97{,}739.9$ cu ft., or $97{,}739.9 \times 7.48 = 731{,}094$ gallons of water.

The Working Capacity of the Holder

The working capacity of the holder will be equal to the volume of the cylindrical portion of the inner section, the gas in the space under the crown above this cylindrical portion of the inner section, the gas in the space under the crown above this cylindrical portion not being available for use, plus the volume of that portion of the outer section that is not lapped by the inner section, nor required to be kept below the water level in order to avoid any danger of the gas blowing out from under the bottom curb. The cup being 16 in. deep, and safety requiring that the bottom of the outer section should always be kept 12 in. below the water level, the working height of the outer section will be 2 ft. 4 in., or 2.33 ft. less than its total height. The total height being 20 ft., the working height is 17.67 ft. The diameter of the inner section being 87 ft., the volume is equal to 5944.7 (the area of a circle 87 ft. in diameter) $\times$ $20 = 118{,}894$ cu. ft. The diameter of the outer section being 89 ft., the working volume of this section is equal to 6221.1 (the area of a circle 89 ft. in diameter) $\times$ $17.67 = 109{,}927$ cu. ft. The working capacity of the holder is therefore 228,821 cu. ft.

Weight of Sections in Two-Lift Holder

176. A two-lift holder, the upper section of which is 150 ft. in diameter, gives a pressure of 3.5 in. when uncupped, and one of 5 in. when cupped. What is the weight of each of the sections? Give your calculations.

Ans. The pressure thrown by a gas holder, as measured in inches of water by a syphon gauge, is the height, in inches, of the column of water that is

balanced by the weight of the holder. As the pressure acts on each unit of area of the holder crown, the weight of the holder is equal to the product obtained by multiplying the area of its crown by the weight of a column of water, having a height equal to the pressure thrown by the holder and an area equal to the unit used in expressing the area of the crown. Each inch of pressure will represent a weight of 5.208 lbs. per sq. ft., or 0.036 lb. per sq. in. since a cubic foot of water weighs 62.5, and therefore a column of water one square foot in area and one inch high will weigh $\frac{62.5}{12} = 5.208$ lbs. and a column of water one square inch in area and one inch high will weigh $\frac{62.5}{1728} = 0.036$ pounds.

In the example given, the holder has a diameter of 150 ft. The area of a circle being equal to the square of its diameter, multiplied by 0.7854, the area of the crown is 150 ft. × 150 ft. × 0.7854 = 17671.46 sq. ft. The pressure thrown when the holder is uncupped, that is, when the upper or inner section alone is working, is 3.5 in. The weight of this section is therefore 17671.46 × 5.208 × 3.5 = 17671.46 × 18.228 = 322,115 lbs.

In the same way the weight of the two sections together is equal to 17671.46 × 5.208 × 5 = 17671.46 × 26.040 = 460,165 lbs.

The weight of the outer section will be 460,165 — 322,115 = 138,050 lbs.

Weight in Pounds Equivalent to Pressure

In the Handbooks for Gas Engineers, tables are given showing the weights in pounds corresponding to each 1/10 of pressure thrown by gas holders of different diameters from 20 ft. to 150 ft. The weight of any given holder can be obtained by multiplying the number found opposite the diameter of the holder in these tables by the pressure thrown expressed in tenths of an inch. The figure given in the table for a holder 150 ft. in diameter is 9,205 and this, multiplied by 35 and 50, gives 322,175 lbs. and 460,250 lbs. as the respective weights of the upper section alone and of both sections combined. The difference between the weights obtained by the two methods is probably due to a greater number of decimal places having been used in making the calculations by which the tabular numbers are obtained than were used in the calculations given in the first part of this answer.

Weight and Pressure Calculations

177. A gas holder is 125 ft. in diameter, and gives three inches pressure when full. How much more would it have to weigh to give four inches pressure?

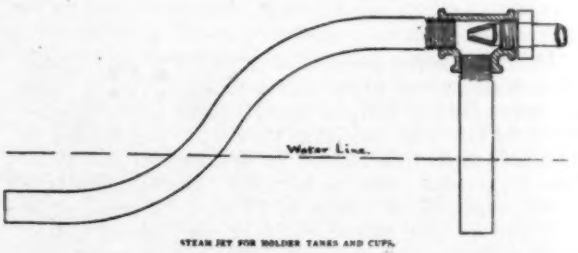
Ans. It is evident that a holder throwing three inches pressure when full must have added to it, to throw four inches pressure when full, a weight equal to a cylinder of water having the diameter of the holder and a depth of one inch. The holder in question, being 125 ft. in diameter, has an area of 125 × 125 × 0.7854, or 12,271.87 sq. ft. A body of water having an area of one square foot and a depth of one inch weighs one-twelfth as much as a cubic foot of water, or 5.208 lbs., which, multiplied by the area of the holder, 12,271.87, will give the weight of water that would cover the holder one inch deep, or 63,912 lbs.

A cubic foot of water has been taken as weighing 62.5 lbs., in solving the above problem, because although a cubic foot of distilled water, at 60 deg. temperature and 30 inches mercury, weighs 62.355 lbs., the commonly accepted weight is 62.5 lbs.

The Steam Jet

178. Give a description, illustrated with sketches, of some form of steam jet that will give good results, when applied to keep the water in the tanks or the cups of gas holders free from ice.

Ans. A very good form of steam jet that can be made from ordinary pipe and fittings is illustrated on the cut. The only fittings needed are a 1 in. tee and a ¾x1 in. or a ½x1 in. bushing. Into one of the openings on the run of the tee is screwed either a ¾ in. or ½ in. steam pipe, with its end drawn down to a jet opening not more than ⅛ in. in diameter. When screwed into the tee, the end of this steam pipe should project a little past the center of the tee. A piece of 1 in. pipe about 18 in. long and offset about 6 in. is screwed into the other outlet on the run. Another piece of 1 in. pipe, from 6 in. to 8 in. long, is screwed into the side outlet. When placed in position for work, the tee is set just above the water line in the holder tank or cup, with its run horizontal and the side outlet looking down. The



STEAM JET FOR HOLDER TANKS AND CUPS.

open end of the nipple in this outlet and that of the offset piece are both below the surface of the water. When the steam is turned on, the jet issuing from the orifice creates a vacuum in the side outlet nipple, and the water rises in this nipple and is blown along with the steam through the offset piece. Thus this jet not only heats the water, but also induces a rapid circulation around the tank or cup, as the case may be, and is therefore much more effective than a jet which merely blows the steam into the water, since water will not freeze as quickly when in comparatively rapid motion as it will when almost at rest.

The Painting of a Gas Holder

179. Describe the painting of a gas holder, giving each detail of the work, and including the preparation of the iron by removal of old paint and rust.

Ans. The crown of the holder should be scraped and painted before beginning the work on the sides. Brush over thoroughly with wire brushes, notice the seams and rivets particularly, and brush thoroughly around and between the rivets. Where the old paint is scaly, blistered, or in thick lumps, scrape the surface with chisels or scrapers. Do not let the men skip from one place to another, finish each sheet before beginning another. OOn the crown begin at the center and work outward. When the cleaning is done, and when ready to paint, sweep the surface with brooms and apply paint. Work it on as thin as possible, and apply two thin coats in preference to a single thick coat. Be sure the first coat is dry before starting the second.

If leaks are found they should be stopped before the painting is begun.

Cleaning the Sides

The cleaning of the sides of a holder will depend upon the conditions at the works. If the holder can be put out of use, the cleaning and painting can proceed uninterruptedly. If the holder remains in use the work will proceed as opportunity offers.

In cleaning, begin at the top row of sheets and work down. If possible, provide a sufficient number of men to do the cleaning as the holder rises. If this is not practicable, arrange your force to cover one-half, or any other fraction of the circumference, at one time.

Provide scrapers, brooms and brushes with short and long handles. Short ladders will also be found convenient at times. There should be no hurrying, and the foreman should inspect and pass upon each sheet as it is cleaned before the workman changes to another sheet. Faults are located more certainly this way than by inspecting at intervals.

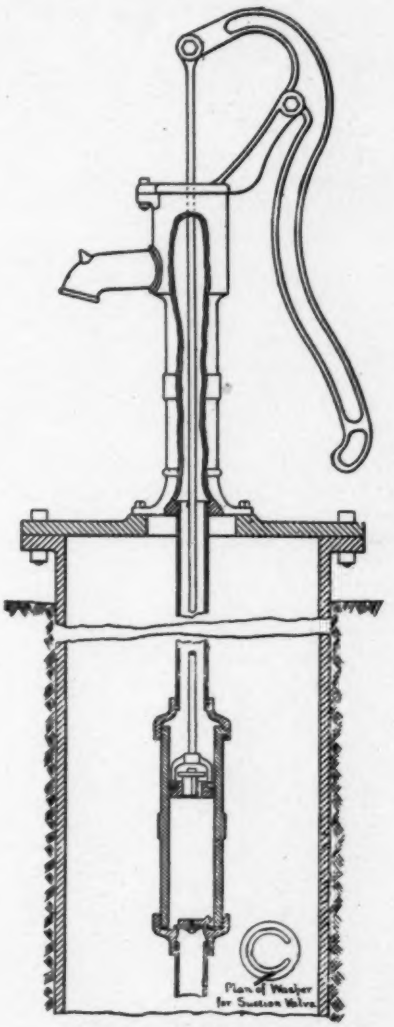
Do not paint until the cleaning is finished for the day. Then begin at the top and work down. When the upper sheets are being painted the holder will be nearly grounded. It can be made to rise very slowly, so that by the time any course of sheets is, say, five feet above the water, the surface is thoroughly dry. The paint should be worked well in as it is applied. The paint should not run. Only such sheets as can stay above water at least three hours should be painted. When the bottom sheets are reached, have the holder up in the morning nearly to blowing, and keep it up as long as possible, so that the paint can dry thoroughly.

Pump for Removing Drips on Inlet and Outlet Pipes of Gas Holders

180. Give a description, illustrated with sketches, of some form of hand pump used for pumping the drips on the inlet and outlet pipes of gasholders in brick tanks.

Ans. As the drips on the inlet and outlet pipes of gas holders in brick tanks are usually so far below the surface of the ground that an ordinary suction pump placed at the ground level would have too long a suction pipe to work satisfactorily, it is customary to use a form of deep well pump for pumping them. This kind of pump has the further advantage of being removed from any danger of freezing, so that it is not necessary to protect it from cold.

A form of deep well pump that is frequently used for gas holder drips is shown on the accompanying cut. The pump proper consists of a cylindrical cast



PUMP FOR GASHOLDER DRIPS.

iron barrel, of suitable diameter and length, threaded at each end to receive caps similar in form to reducing couplings, these caps being threaded both to screw on the barrel and to receive a pipe of the desired size. The interior of the barrel is bored true. The piston is made in two parts, an upper and a lower. The upper part is an internally threaded ring provided with a yoke tapped for the insertion of the

piston rod. On the outside the lower part of this ring is turned down to form a recess into which the upturned edge of a leather washer can fit. The lower part is in form like a bushing, but has no internal thread. The portion having the smaller diameter is threaded externally to fit the internal thread of the upper part of the piston, and its end is finished to furnish a seat for a cast iron poppet valve. These parts of the piston are not finished and have a little smaller diameter than the barrel, but the piston is made to work air and water tight in the barrel by a leather washer held between the two parts, and of such a diameter as to be turned up into the recess in the upper part when the piston is pushed into the barrel. When turned up in this way the tendency to flatten out keeps it pressed tightly against the wall of the barrel. In putting the piston together the valve is put in place on top of the lower part, the leather washer is put on outside of the threaded portion of this part, and the two parts are then screwed together, the washer being held between them.

The Bottom Valve

The bottom valve is formed by a leather washer cut to the shape shown on the cut. The outer ring of leather is held between the lower end of the barrel and the bottom cap, and the flap, weighted with a small circular cast iron weight fastened to it by a round-headed screw and washer, acts as the valve, the narrow neck serving as a hinge. The lower cap is made with a raised ring finished to furnish a seat for this valve.

This pump is placed at any convenient height in the inlet or outlet pipe, being usually set from five to ten feet above the bottom of the drip, a suction pipe being run from the lower end to the bottom of the drip and a discharge pipe from the upper end to the base of the stand which forms the external discharge pipe and furnishes a support for the handle by means of which the piston is moved up and down. This stand is in appearance exactly like an ordinary suction pump, but, of course, contains neither piston nor valves, being as stated simply a continuation of the discharge pipe. Its base is threaded internally to receive the pipe coming up from the pump barrel, and is provided with a flange by which it is bolted to the flange covering the top of the inlet or outlet pipe. This cover flange is provided in the center with a circular hole through which the pump can be put in or taken out in case it is necessary to repair it.

Putting the Pump Together

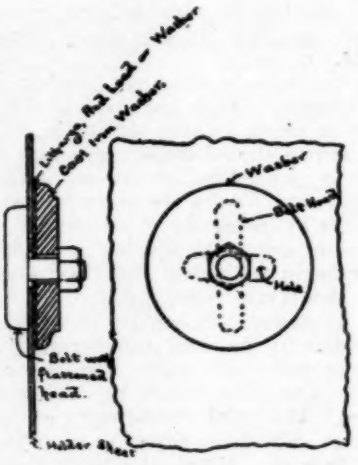
Before being put into the pipe the suction pipe is screwed to the pump, the piston rod, which may be either a rod or a pipe, is made the proper length, tie discharge pipe screwed to the pump and then to the base of the stand, the piston rod fastened to the pump handle, and the whole thing is then put into place with the pump, supported from the stand, inside the pipe and at the desired height above the bottom of the drip.

A small hole should be drilled in the discharge pipe just above the pump, so that when pumping is stopped, the water in the stand and in the discharge pipe above this hole will run out and all danger of its freezing be avoided. A means of testing the working of the pump should also be provided by putting in a small pipe opening above the cover flange and running down into the drip to a point say 2 in. above the lower end of the suction pipe. The upper end of this pipe being closed by a stopcock, this stopcock is opened when the pump ceases to raise water. If gas blows when this is done the drip is dry, if it does not the pump is out of order and should be repaired.

Stopping Small Holes in Gas Holder Sheet

181. Give a description, illustrated by a sketch, of the manner in which to stop a small ragged hole in a gas holder sheet too thin to permit of tapping a thread.

Ans. Make the hole oblong, say 1 in. to 1⅛ in. long by 5/16 in. wide. Flatten the head of a ¼ in. bolt until it is only ¼ in. wide. Make a cast iron or other washer, 2 in. in diameter, with the hole a tight fit over the bolt. Mix a stiff paste of glycerine and litharge, red lead or any similar substance. Tie a string to the bolt, put the flattened head through the hole, give it a quarter turn, slip the washer coated with the paste over the bolt, grummet this with with lamp wick, screw down the nut until every-



thing is drawn up tight, saw off the projecting end of the bolt, and the job is complete.

Stopping Large Holes in Gas Holder Sheet

182. Give a description, illustrated with sketches, of the way in which you would patch a ragged hole, too large to be stopped by a single bolt and washer, in a holder sheet too thin to permit tapping a thread.

(Thirty-third Installment Next Week)

Here and There in Selling

William H. Matlack

Price cards are much more desirable to use in connection with appliances displayed on the floor than the usual price tag attached to the oven door handle or the main top burners of a gas range. Price cards can be written in such a manner as to tell not only the price of the range or other appliance, but to state upon what terms it may be purchased. Another reason price cards are more desirable than price tags is that the customer has to walk up to the appliance and take the tag in his hand to learn the price, while with the card he may learn price and terms by simply glancing at the appliance in passing. Other folks buy for the simple reason that terms "fit the

purse" these folks buy too for the reason that they learn of the merchandise through store publicity or cards attached to the merchandise display.

The Dividend Payment Plan

In selling on time, make the first or down payment the low one. If your appliance is really sold the customer will always secure the money for the remaining, larger, payments. For if he has been sold he has been sold not so much cast iron, steel, copper, enamel and nickel, but he has been sold an appliance constructed of these materials to render a specific labor or money saving task, to cut down man's effort ,to eliminate woman's worry or to increase man's efficiency in some manner.

TRY IT!

More men fail to put across the thing they want to do because they are afraid to try it than because of lack of ability to succeed.

Gerald Stanley Lee says: Photography has been developed more in ten years by the blunders of amateurs than by the labors of professionals. And the other day I heard a radio expert say that the great development of radio in the United States is due very largely to the work of the amateurs, because the amateur is not hampered by fear of failure, or bound by sets of rules he thinks immutable.

Men succeed in doing the wonderful things, the great things, by being willing to go ahead and try it in the face of probabilities to the contrary, or in opposition to the caution of the conservative and the fear of the frightened.

If you are going to do something big in your business, make up your mind that you will have to take some new steps, that you will be compelled to go part of the distance over an untrod way. The man who follows only the beaten path may accomplish enough to satisfy him, but he will never get to the top where he will be numbered with those who have done the unusual, the really remarkable.

Fit yourself by familiarity with the established principles to go as far as the beaten path goes in your direction, but fit yourself by the development of independent habit of thought to strike out for yourself when you reach the point where the pathway ends.

Every worthwhile thing ever done has been done for a first time by someone who had to strike out alone and try it.

TELL THE TRAVELER ABOUT GAS SERVICE

Painted bulletin boards are being used quite extensively by some of the gas companies, here and there, and according to the estimate of cost per reader, which was supplied by the well known firm of Thos. Cusack & Co., this type of advertising should cost "seven cents per thousand readers." Thus, if a certain board were rented to you for $25 a month, the location should be such as to guarantee a circulation of 357,000 a month, or 11,900 a day."

This is not expensive advertising—but the man who employs the painted bulletin must first of all decide that his message must be short and to the point, for the average painted bulletin is read on the run, so to speak. It seems to us that the painted bulletin could be well and profitably used by the gas company to promote good will and to advertise to travelers going through the cities via train and automobile.

Tell folks that your town has good gas service; tell them how easy it is to secure this service and the appliances you sell. Have a bulletin near the railroad station and others on the well traveled trails entering your town and, if possible, have them lighted at night.

Remember, the more you talk about gas service, the more folks will want to use it. Greet the guest to your city and tell folks who pass through that "if heat is required, you can do it better with gas."

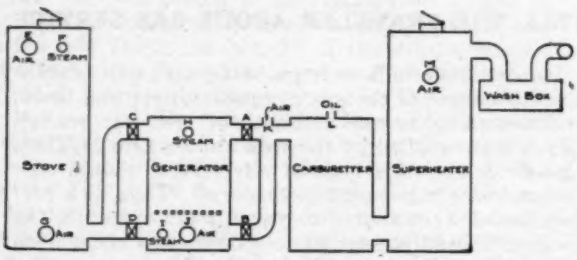
Superheated Steam and Air Blast in Water Gas Manufacture*

A description of some interesting, apparently paradoxical results

United Gas Improvement Company, Philadelphia, Pa.

THE peculiarity of a water gas generator is that the productive capacity, its efficiency as to its ability to decompose steam and its efficiency as to the use of generator fuel will depend not on the average temperature of the fuel bed but on the temperature of that small and hottest portion of the fire sometimes called the reaction zone. The term "zone" is, we know, misleading if it brings a conception of a flat disc of high incandescence of moderate thickness lying parallel with the grate. A clean bed of fuel in active combustion with air, undiluted with inert products of combustion, passing through it, will soon give a temperature above the melting point of the ash, to be followed by formation of clinker between the grate and the combustion.

The air will pass around such clinker, usually reaching the side walls, and enter the bed of fuel more on the vertically inclined sides than through the bottom. The air forces its way through the ash and clinker through openings between the particles of fuel, giving intense heat, rapid consumption of carbon and rapid fusion of ash. The steam follows again carrying off the carbon, ash further accumulating and hardening into clinker. The passage fills up with ash and clinker and the air finds new channels with the settling fuel bed and pressure of air and steam.



What Portion of the Fuel Bed Is Heated to the Reaction Temperature and Where Is It Located?

Assuming a generator operating on 32 lbs. of fuel per thousand cubic feet of carburetted gas, of which 14 lbs. combine with the steam to form blue gas, we find that for the average of the four-minute run only fifteen-hundredths of 1 per cent of the total fuel passed off in the form of blue gas. In the four minutes there was about six-tenths of 1 per cent of the entire fuel bed capable of making blue gas in economical quantities. While there was a large mass of fuel at a high average temperature, yet there was found by the steam only a small amount of carbon less than 1 per cent—heated to a reaction temperature and this area or volume was so small as to be rapidly cooled to inefficiency by the flow of steam.

The Personnel Executive

The personnel executive, or employee manager, should be chosen for his experience, education, training, and, above all, his character. He must have poise, balance, refinement and dignity, and be diplomatic, democratic and tactful; he must be human, but must not let sentiment govern his judgment. The absolute dependence of business and social life of a community upon its public utilities throws a great responsibility upon the people who operate public utilities, and this responsibility in turn goes back to the Personnel Department. To paraphrase an old saying—if the Personnal Department is right, the employees will be right; if the employees are right, the utility will be right; if the utility is right, the service will be right; and if the service is right, everything is right.

Location of High Reaction Temperature Part of Fuel Bed

The location of this high reaction temperature portion of the fuel bed is most important to our proper understanding of our subject.

If pure oxygen comes into combustion with pure carbon a temperature of about 4500 deg. F. may be obtained. The temperature of a fuel bed will depend on:

First—The proportion of free oxygen in gases supporting.

Second—The proportion of combustible materials in the fuel. The temperature will rise higher than the proportion of carbon in the coke. The amount of gas, the percentage of steam decomposed will increase faster than the percentage of the carbon in the coke. A coal of 50 per cent ash is said to be useless as a boiler or generator fuel.

Third—On the amount of preheating of the air supporting combustion.

Is the highest temperature reached when the air, almost unmixed with inert products, comes in contact with carbon mixed with small percentages of ash and not highly preheated, that is, inside the ash but not far inside; or must we look for it in the heart of the fuel where the carbon most free from ash meets

*Delivered at the Annual Convention of the Illinois Gas Association.

highly heated but greatly adulterated oxygen? On the answer to this question depends the value of preheated air.

Apparatus Used for Experimenting

In Figure 1 is shown a water gas set to the generator of which is attached by "reverse" connections a stove for preheating steam and air.

Air may be admitted to the top of the superheater and flow through superheater and carburettor either up or down through fire and the generator gas burnt in the stove with secondary air entrance at the bottom of stove, or air may enter the top of the stove, flow in the opposite direction and burn in the fixing chambers. Air may be admitted cold to the generator bottom and the generator gas therefrom burn in the stove or fixing chamber, and steam may be admitted to the top of the stove for superheating, or at the generator bottom for use as saturated steam.

Difference in Heat Output Compared to "Normal" Setting

The difference in heat output in this form as compared to "normal" setting, by which will be meant for purposes of this paper a simple water gas set using cold air and saturated steam, split run, will be:

F=Amount of heat leaving the superheater with blast and gas normal set.

F_1=Amount of heat leaving superheater with blast and gas,—set with stove.

F_2=Amount of heat leaving the stove with blast.

$F-(F_1+F_2)$=the difference in heat loss.

If the bottom of the stove is maintained at 1200 deg. F., which can be done with gas coal as fuel by blasting through the stove from one-third to one-half time, according as the air was superheated and the direction of flow through the fire. The air entering the fire from the stove was about 1100 deg. and the temperature of the blast products leaving the stack valve of the stove was about 400 deg. F. There was, of course, a cooling in the upper part of the superheater due to air admission at that point, and while no measurements were taken, it seems evident that the heat output from the normal setting was greater than the stove setting. We are not particularly concerned in this now; the question before us being as to the effect on gas making of the return of this heated air and steam to the generator.

If the air and steam are both superheated there will be returned to the generator some 31,000 B. T. U.'s per thousand feet of carburetted gas and this should equal a saving of four lbs. of fuel per M. if this heat can be obtained by not cooling the fixing chambers to a point that will require more combustion of fuel to maintain the fixing chamber temperature, which can be done, or nearly be done, when gas coal is used as fuel.

If the theory holds true that the highest temperature of the fire is obtained where the oxygen of the air has not been contaminated with inerts getting into combustion with the carbon of the coal in which the ash content of the fuel has increased, but still high in carbon, then there would be promise in the idea that the area of the surface of the fuel that could be made to reach these high reaction temperatures might be increased by reason of the preheating of the air. Also, if superheated steam could follow the air, and in the same direction, the cooling of these surfaces of high temperature would be delayed and more steam would be decomposed. This would have the effect of increasing the capacity of the set, and probably decrease the fuel required per M.

Downward Blast

If suprheated air is introduced on top of a bed of coke fuel, combustion will take place at once, the carbon will be removed from the coke and ash will be formed on top of the fire and gradually work down through it. There will be the usual pollution of the oxygen, combustion will take place near the top of the fuel bed and the heat of combustion will be carried down and increase the general heat of the body of fuel.

Superheated Air Admitted to Fuel Bed

If superheated air is admitted to a fuel bed of gas coal a somewhat different phenomenon will occur. The heated air will more rapidly raise the body of gas coal to the point of distillation therefrom of gas and oil and the combustion that will take place will be between the heated air and these evolved gases, increasing the rapidity with which the gas coal will be converted into coke, making a more porous and friable coke, and increasing the temperature of combustion through the fuel bed; there will be a more rapid evolution of gas from the partially coked coal, further increasing the temperature of the entire mass of fuel without consumption of the coal itself and without the deposit of ash on top of the fire. It was expected when this theory was advanced that this increase in the temperature of the bed of fuel, this more rapid coking of the coal, while it would not bring any portion of the fuel up to the reaction temperature, would still be beneficial in preparing the

AIR		STEAM									
Cold		Superheated		Saturated		Superheated		Split			B. t. u. per gal.
Up	Down	Up	Down	Up	Down	Up	Down	Run	Capacity	Fuel per M	of oil
x				x	x			Yes	100%	100%	100%
		x	x			x		No	88%	108%	99%
x			x	x			x	No	97%	113%	96%
		x	x	x			x	No	60%	100%	87%
		x	x	x				No	56%	92%	90%
		x				x		No	69%	107%	96%

fuel to be brought up to that temperature more rapidly, or with a smaller percentage of oxygen in the supporting air of the succeeding up blast.

Introduction of Cold Air at Bottom of Generator

Acting on this theory, it was thought that perhaps it would be better to introduce the air cold at the bottom of the generator, so that it would form as little combustion as possible with these high ash combusticles and reach the reaction zone with less dilution than by introducing superheated air on top of the fire, thereby bringing about more intense combustion.

The apparatus used in making the tests was, in the cases shown on the attached table, the experimental plant located in the Philadelphia Gas Works, being a 6 ft. set complete with all parts—condenser, relief holder, purifiers, meters, etc.—independent and capable of accurate measurement. Other tests were made on an 11 ft. set to which was attached a Connersville meter located beyond the condensers.

Discussion of Results

In the first line in the attached table is shown the operation of a normal setting—all cold up blast and saturated up and down steam split runs. When the blast was divided up and down there were no split runs because it was thought best not to do so.

The fuel used was a West Virginia gas coal of very good quality, containing 35.5 per cent of volatile and about 5.5 per cent of ash.

In regard to the test shown on the third line: The theory in this test was that if the reaction zone is so placed that the air entering the bottom of the generator, with its fresh and undiluted oxygen, comes in contact with moderately high carbon with the resulting high temperatures produced, it follows that there must have been some high ash combustible between the entering air and the reaction zone which, if the air is preheated, will stimulate combustion, absorb some of the oxygen and prevent combustion taking place at the point we desire it, whereas, if this air was cold, this preliminary combustion might not take place and the oxygen be undiluted but reach the high carbon fuel. It was therefore suggested that the apparatus be operated with superheated down blast, cold up blast, superheated down steam and saturated up steam. This did not produce as good results as the normal operation.

No combination that is here shown of superheated air, either up or down, is as economical as the normal cold air with up and down saturated steam.

No combination by which air is heated in a separate vessel is shown here to give as good results as where the air is preheated by passing through the bed of fuel.

Conclusions

I will close, with the hope that some explanation may be presented that will clear away what is apparently a paradox. With the return to the generator of some 31,000 B. T. U.'s through the superheating of the steam and air, combustion was not stimulated; the area of the fire brought in a given time to the high reaction temperature was not increased, and the production of gas was not increased, nor was gas made with less fuel per thousand cubic feet.

We know very well that with gas coal the behavior of a generator is greatly influenced by the diameter of the grate, but the tests that were made on the 11 ft. machine would appear to show, though not conclusively, that the relative results of the different methods of operating are about parallel with the operation of the 6 ft. set where accurate measurements could be made.

There was, however, an improvement made through the superheating of the steam, particularly with all up runs. Here the blue gas and the blow-run gave higher heat units than when down steam or down blast was used, as should be expected with soft coal.

You are asked not to construe this paper as a condemnation of the stove principle. What has been said constitutes an apparent contradiction that must be reconciled before final conclusions are reached.

Mechanical Aids in Accounting*

A description of various mechanical devices which save time

F. A. Brine

Georgia Railway & Power Company

THE greatest strides in accounting in this country have been made in the past thirty years, and have been brought about by those men who have founded mammoth industrial corporations.

This great era of construction and development necessitated a revolution in accounting methods. It has brought about keen competition in business and the requirements of the modern executive had to be met by the accountant in furnishing comparative reports, analyzing the operating results in each department of the business.

Public utilities have expanded tremendously during the past twenty years, and the pen and ink methods of the olden days would be out of the question today. Doing accounting work mechanically was first given impetus by the invention of the typewriter.

*Read before the Southern Gas Association at its sixteenth annual convention, held at Augusta, Ga., April 22-24, 1924.

Typewriter

The first recorded attempt to invent a typewriter was found in the British patent office January 7, 1714. Throughout the remainder of the eighteenth century, only one other attempt at invention is recorded—in the year 1784. The first American patent on the typewriter was granted in 1829 to William Austin Burt. Numerous other patents were applied for during the next fifty years. The first practical typewriter was invented by Christopher Latham Sholes, and a contract was entered into March 1, 1873, with Philo Remington. Sholes, a short time later, sold his royalty rights for $12,000—a goodly sum in those days, but the only reward, so far as we know, that he ever received for his priceless invention and the years of labor he had bestowed upon it. Humanity is indebted to Mr. Sholes for the amazing achievement brought about in the business world by the writing machine. It not only has saved business time, but it has stimulated business.

Addressograph

The addressograph is almost indispensable in the large public service companies. The first addressograph plates used in connection with customers' accounts were set up with the rubber type, showing the ledger, folio, name and address. This old style plate has been superseded with a metal plate. There are many different style plates used in connection with the addressograph. The simplest and least expensive is the one-piece addressograph plate. This plate permits writing over; that is, embossing new type over old, which is very economical when making changes or corrections. A large number of the public service companies use the three-piece plates—one piece for ledger and folio, one piece for the name and one piece for the street address.

Its Use in Payroll Work

The addressograph is used extensively in connection with payroll work, and has proven a great time saver in the compiling of payrolls and payroll data. A listing attachment, which automatically prints and spaces, is used in running off employees' names on payrolls and in making up dividend lists. Addressograph plates are also made for all prepayment meter customers and coupons are run off each month for use of the prepayment meter collectors and readers. The Public Service Automatic Feed addressograph machine is used in addressing all customers' service bills. This machine makes 7,500 impressions per hour, as against 1,000 addresses per day—obtained where the address is written with pen and ink.

Adding and Calculating Machines

The first attempt to invent an apparatus for mechanical calculating was made in Naples, Italy, in 1816 A. D., known as the Napier Rod, which consisted of strips of bone having numbers on the edge which could be brought into various combinations, and thus aiding calculations. The present-day slide rule has its direct basis in Napier's invention. The first commercially successful adding and listing machine was placed on the market one year later, in 1888, by W. S. Burroughs. Since that time marked improvements have been made in these machines. The latest machines are now electrically operated and have been made much more flexible and can be adapted to many classes of work.

Calculating Machine

There are a great number of calculating machines on the market, which are used essentially in percentage work, multiplication and division.

I will not go into the details of all the various make machines; but from our experience we have found the electrically operated calculator, which automatically proves the results obtained, to be the most satisfactory machine for the class of work handled in this company. This machine is used mainly for calculating percentages, and for this work it is rapid, accurate and dependable. It would be hard to accurately calculate the savings brought by the use of the adding and calculating machines in the large public utility organizations.

Tabulating Machine

The tabulating machine can be used to great advantage in connection with accounting work, and we replaced all expense ledgers with the tabulated punch cards. It was next decided that the payroll distribution would be handled to much better advantage with the use of the tabulating cards. Now all labor distributions are made up on these machines. The material and supply accounts had been a source of much trouble and annoyance and the stock ledgers were continually out of balance with the control account, requiring endless checking. All material and supply accounts were assigned lot numbers; and the tabulating machine method, installed in connection with this work, resulted in a great saving in time and expense; and in addition, reports of purchases, withdrawals, and balances, by groups of material were readily obtained, which was impossible under the old method.

Internal Revenue Data

This company is required to furnish the Internal Revenue Department each year the wages of all employees receiving $1,000 or more. This data is compiled by punching the employee's number and the amount earned on tabulating cards from the payroll. These cards are sorted by man-number and the listing machine prints the man-number and the amount earned by each employee. This information was formerly compiled by pen and ink method, and required the entire time of one clerk during the year. This work is now carried on with practically no additional expense.

Customers' Deposits

Customers' deposits were next transferred to the tabulating cards, using a dual card—the information written on the left hand side of the card, and same information punched on the right hand side of the card. This has brought about a considerable saving in taking off balances at the end of the month. The tabulating machine is also used in taking off distribution of merchandise sales and petty cash.

Advantages of Machine

The tabulating machine method may be used to great advantage and with a great saving of time in all classes of accounting work where the tabulation of a great number of items, sub-divided into a great many other items, is necessary. Many different kinds of information may be obtained from the original tabulating cards by re-sorting to obtain the results desired. It has made accounting more mechanical than any other invention; and, by its use, executives are able to get the business facts much earlier after the close of the month's business than was possible under the old method; and at a great reduction in cost. These machines are rented, except the key-punch machines. The rental of the sorter is $25 per month, and the rental of the listing tabulator is $125 per month.

Folding Machine

This machine is used principally in connection with folding the customers' service bills in the proper size, ready to be inserted in the envelope for mailing; and is a factor in getting the service bill to the customer with the least possible delay. There is also an advantage of the machine-folded over the hand-folded bill, in that where bills are folded by machine, they are all folded evenly, which is very necessary when the outlook envelope is used. These machines are operated by electricity, and will make one, two or three folds in a sheet as large as 12x18 inches at a rate of 5,000 per hour.

Conclusion

The present-day mechanical accounting devices are a tremendous aid to business. The value to a utility from these labor saving devices are many in addition to actual saving in time consumed in the work.

The American slogan today is "Do it Mechanically —Do it by Machinery." Business concerns which have not yielded to the present day mechanical enlightenment in doing business must yield to more progressive competitors. The idea of the modern business man today is how to spend the least to make the most, which, to accomplish, means a thorough study of all problems in connection with their business. This can only be accomplished by the use of the most efficient machines, in order to analyze conditions, check losses, trace wastes, prove costs, with as little loss of time and with the fewest number of people necessary to obtain the results.

HOW DO THEY DO IT?

J. B. Dillon

The caption used is in keeping with the thoughts of many gas utensil dealers, and that is why we are trying to show them how one of the most successful dealers in gas utensils does it.

Facts and figures are always at hand, so that a prospective customer may be told just what the expense will be for the installation, then the average cost for maintenance—that is, the cost of the gas—and, as all of you know that gas is the greatest heat unit for cooking purposes, the customer is always satisfied, and then the dealer to "tell the world" should use the newspapers, as was done by the Public Service Company of Colorado.

The Modern All Gas Kitchen

at the

Radio Cafe

is a striking example of efficiency, economy and cleanliness, showing the Rudd Automatic Water Heater, which provides hot water to wash and sterilize the dishes which serve 2,000 patrons daily. After three months' trial, Mr. Senter shows a considerable saving over coal.

Installed and Sold by

Public Service Company

Of Colorado

Just as soon as the new Radio Cafe was opened for business, the owner, in a full page of the newspaper, showed a clear-cut view of his dining room, and, as a border for the picture, the various dealers supplying the material for the alluring room, told just what they did to perfect the thing.

Here is how the Public Service Company made its little speech and now, honestly, isn't that telling it, and telling it right for future sales?

GAS ENGINEERING COURSE TO OPEN SEPT. 30, AT JOHNS HOPKINS UNIVERSITY

The following letter was received by Edward L. Rieha, chairman of the Committee on Gas Engineering Chair at Johns Hopkins University, Baltimore, Md.:

Aug. 2, 1924

Gentlemen:—

As you are aware, the campaign for subscriptions to the foundation of a Chair of Gas Engineering in the Johns Hopkins University has been successfully completed. Practically the entire amount of subscriptions for the first year has been collected, the subscription list has been approved and accepted by the Johns Hopkins University, and the university has already taken definite steps looking to the opening of the Department of Gas Engineering on September 30, the date of the beginning of the next academic year.

This letter is to call your special attention to the opportunities which are now to be thrown open to young men planning to enter the gas industry, and also to those who are already engaged therein. It is also intended to urge you to consider the advisability of persuading and aiding promising young men in your employ, or within your knowledge, to enter the new school.

The new courses will offer special opportunities to men of the following types:

1. Men who have already been engaged in the gas industry, who already have a certain technical knowledge, and who desire to perfect themselves professionally for positions of wider responsibility.

2. Technical employees of existing gas companies of various types for whom advanced scientific training or investigation and research is desired. Companies having special problems for solution will do well to send a representative to the university for study and prosecution of such problem.

3. Promising young men with no technical training, but who desire to enter a regular four years' undergraduate college course, leading to a degree in gas engineering. All such young men should be graduates of approved high schools.

4. Promising young men, sons of employees of gas companies. Young men of this type are being assisted by an increasing number of companies in other fields of industry throughout the country as a part of a general plan for rewarding faithful services, and for improving the future personnel of the body of employees.

Speaking generally, the new course in gas engineering offers opportunities for drawing into the gas industry an increasing number of young men with wider technical and professional training. These young men would normally enter the undergraduate school, for entrance to which a high school training would be necessary. Further, the new course will offer opportunities for men who have already had technical training, to enter graduate work, looking to training for research and advanced degrees.

The undergraduate courses offer particularly good opportunity for those companies who are desirous of aiding the sons of employees by scholarships or otherwise in obtaining a technical collegiate education. The undergraduate courses will be arranged largely along the lines pertaining to other branches of engineering. The first two years will include such fundamental subjects as chemistry, English and mathematics. In the third and fourth years the time is devoted almost exclusively to such technical subjects as chemistry, elementary courses in electrical and mechanical engineering, and major courses in the gas field. It is planned to conduct a large part of the laboratory work in the last two undergraduate years in the plants of gas industries in and around Baltimore.

Special attention will be given to advanced courses for those who have already been through college, or those who desire to conduct independent experimental work. Graduate work and research have been emphasized as important and desirable features for the new course, and the university will give special attention in this direction.

We feel positive that the expansion of the gas industry for the future will be largely dependent upon the thorough knowledge and ability of the men connected therewith, and the realization by them of the great many possibilities of gas and its application in all its various phases.

It is expected that early announcement will be made of the appointment to the Chair of Gas Engineering, of a man well known in the gas field as having special qualifications for teaching, for knowledge of the industry at large, and for scientific and technical attainments. This announcement will then be followed, at as early a date as possible, by one of the curriculum of the undergraduate school, the conditions for admission, etc.

In conformity with the regulations pertaining to other departments of the university, the tuition for undergraduate students is $250 per year, and for graduate students $150 per year, payable in advance in two semi-annual installments. In addition to tuition, laboratory fees, text books and other fees will require about $75 per year.

Forms of application may be obtained from the registrar of the Johns Hopkins University.

Very truly yours,

EDWARD L. RIEHA, Chairman.

Committee on Gas Engineering Chair.

Current Market Prices

COALS (By Courtesy of Coal Age)

A. Bituminous.

(Spot prices, F. O. B., mines, net tons).

High Volatile, Eastern	Market	Price
Pool 54-64 (Gas Standard)	New York	$1.35 to $1.50
Pittsburgh screened gas	Pittsburgh	2.30 to 2.50
Pittsburgh gas, mine run	Pittsburgh	2.00 to 2.25
Kanawha lump	Columbus	2.00 to 2.25
Kanawha mine run	Columbus	1.30 to 1.60
West Virginia lump	Cincinnati	2.00 to 2.50
W. Virginia gas mine run	Cincinnati	1.25 to 1.60
Midwest		
Indiana 4th vein lump	Chicago	2.50 to 2.75
Indiana 4th vein mine run	Chicago	2.25 to 2.50
South and Southwest		
Big Seam lump	Birmingham	3.30 to 3.50
Big Seam mine run	Birmingham	1.50 to 2.00
Southeast Kentucky lump	Louisville	2.00 to 2.25
Southeast Kentucky mine run	Louisville	1.35 to 1.75

B. Anthracite.

(Spot prices F. O. B. mines, gross tons),

Market	Freight rates	Independent	Company
Egg New York	$2.34	$8.50 to $12.75	$8.00 to $8.35
Egg Philadelphia	2.39	9.25 to 11.00	8.10 to 8.35
Egg Chicago (net tons)	5.06	8.50 to 12.00	7.25 to 7.45

COKE (By Courtesy of Iron Trade Review).

Connellsville, furnace	$2.90 to $3.00
Wise County, furnace	3.75 to 4.50
Alabama, furnace	5.00 to 5.25
Foundry, Newark, N. J., del.	10.41
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.00
Foundry, St. Louis	12.00
Foundry, Granite City, Ill.	9.00 to 9.50
Foundry, Alabama	5.75

PETROLEUM (By Courtesy of Oil, Paint & Drug Reporter)

(Prices at wells, per bbl.)

Pennsylvania—Ohio—West Virginia.	
Cabell, West Virginia	1.60
Corning, Ohio	1.90
Lima	2.08
Pennsylvania	3.00 to 3.25
Wooster, Ohio	1.90
Indiana—Illinois.	
Illinois	1.87
Indiana	1.88
Oklahoma—Kansas.	
Healdton	.90
Mid-continent (low gravity)	.90 to 1.05
Gulf Coast.	
Gulf Coast, Grade A	$1.50 to $1.75
Gulf Coast, Grade B	1.30 to 1.45

GAS OILS.

Gas Oil, Bayonne, bulk gal.	5¼ to 6c
Gas Oil (32-36) Illinois-Indiana,	4.86 to 5.11
Gas Oil (32-36) Oklahoma, gal.	2⅝ to 2¾c
Gas Oil (32-36) Gulf Coast, gal	4½ to 5c

PIPE AND FITTINGS—CAST IRON GAS PIPE.

(By Courtesy Iron Trade Review.)

Four-inch, Chicago	$63.20 to $64.20
Six-inch and over, Chicago	57.20 to 59.20
Four-inch, Birmingham	56.00 to 59.00
Six-inch and over, Birmingham	53.00 to 53.00
Four-inch, New York	69.60 to 71.60
Six-inch and over, New York	64.60 to 65.60
Standard fittings, Birmingham, base	115.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20.

BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug

Ammonia aqua, 16 deg. drums lb.	5 to 5¼c
Ammonia aqua, 20 deg. drums lb.	6¼ to 6½c
Ammonia aqua, 26 deg. drums lb.	6½ to 7 c
Ammonia squa, anhydrous cylinder, lb.	30 to 36 c
Ammonium sulphate, bulk F. O. B. Works, per 100 lbs.	$2.45 to $2.50
Potash prussiate, yellow casks, lb.	18 to 18½c
Potash prussiate, red casks, lb	37½ to 40 c
Soda prussiate, yellow casks,	10½c
Soda sulphocyanide, barrels, lb.	45 to 55 c

COAL TAR BASIC PRODUCTS.

(By Courtesy of Oil, Paint and Drug Reporter)

Benzol C. P. tanks, works, gal.	24 to 25c
Benzol, drums, gal.	30c
Benzol, 90% tanks, works, gal.	23c
Benzol, 90% drums, gal.	28c
Napthalene, flake, barrels, lb.	5 to 5½c
Napthalene, dyestuff bags, lb.	4½ to 5 c
Solvent Naphtha, water white works, gal.	24 to 25c
Solvent Naphtha, drums, works, gal.	29 to 30c
Toluene, C. P. tanks, works, gal.	31c
Toluene C. P. drums, works, gal.	36c

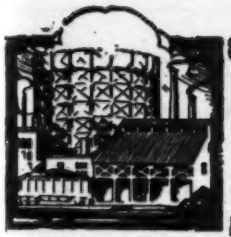
* No quotation, due to strike.

Coal Age Index of spot prices of bituminous coal showed no change during the past week, standing on August 4 at 163, the corresponding price being $1.98.

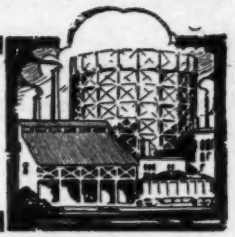
Hampton Roads dumpings for all accounts during the week ended July 31 totaled 352,000 net tons, an increase of 8,940 tons from the week preceding, but the tonnage failed to reach that of the week ending July 17, when 373,600 net tons were handled. The movement of coal at the Lakes made a further advance, being for the week ending August 3, according to the Ore and Coal Exchange: For cargo 830,915 net tons and for fuel 44,066 net tons as against totals of 785,317 and 43,443 net tons, respectively, the week before.

The production of bituminous coal for the fourth week of July improved slightly, the output according to the Geological Survey totalling 7,564,000 tons, an activity that has not been exceeded since March 29 of this year. The previous week showed an output of 7,401,000, according to the revised figures. Anthracite production decreased, being 1,837,000 net tons in the week ending July 26 and 1,840,000 in the previous week.

Anthracite shows a stagnation closely paralleling that of bituminous. The Canadian retailers have large stocks of it which no one seems anxious to buy. Buffalo is proposing to use bituminous in place of anthracite to heat its public schools. No one knows, of course, just to what extent anthracite is being displaced by soft coal, oil and coke. But the combined effect of dilatory buying and substitution threatens to put anthracite operation on slow time. The steam sizes of anthracite are as sluggish as domestic sizes. Retailers are counting on an increase of demand about September 1, and meantime are absorbing the increase in price set by the large anthracite operators.



NEWS OF THE GAS INDUSTRY



New Jersey Gas Association to Hold Mid-Summer Meeting

The mid-summer meeting of the New Jersey Gas Association will be held Friday, September 12, 1924, at Ocean City Yacht Club, Ocean City, N. J. A short business session followed by lots of fun, a real shore dinner, etc. Excellent hotel accommodations can be secured from the Hotel Flanders. The committee urges the members and guests to make their reservations early. Ladies are invited to attend and join in all the sports.

Seeks Gas Franchise for Oneida

Albany, N. Y.—W. E. McClintock, representing the Adirondack Power & Light Corporation, appeared before Public Service Commissioner Van Namee in support of a petition of the corporation for state authority to exercise a gas franchise in the city of Oneida. The corporation furnished gas in Oneida until 1920 under a 50-year franchise granted to its predecessors. Since 1920 it has furnished gas without a franchise, being unable to agree with the city upon terms. The city has now granted a franchise for 15 years, approval of which is now sought.

Wants Permission to Extend Mains

Albany, N. Y.—Hearing was held at Albany by the Public Service Commission on the petition of the Saugerties Gas Light Co. for permission to lay gas mains and supply gas for light, heat and power in the village of Glasco, Ulster county. It was brought out that the company obtained a franchise from the town of Saugerties in 1920, but has never exercised it. The present plant has sufficient capacity to supply all of the gas needed without any extension to the plant. The company plans to spend about $25,000 if the petition is granted in the excavating for and laying the mains.

Kings County Erecting a Five Million Cubic Foot Holder

Kings County Lighting Company, on account of the enormous increase in its business, has found it necessary to proceed with the erection of a new five million cubic foot gas holder on its property at 65th street and Ninth avenue. This holder, in accordance with standard gas practice, is necessary to preserve and insure the continuity of the supply of gas to its consumers.

On Saturday, July 19, the base of the holder was lowered to the sand cushion on top of the concrete foundation prepared for it, this being the first step in the actual erection of the holder. The individual pieces of sheet steel composing the base are 7/8 inch thick and the total circular section is 193 feet in diameter and weighs approximately three hundred tons.

In order to lower this great weight without damage, 140 extra large jacks were used, which were manned almost entirely by company employees, both male and female. To prevent a strain on the rivets the jacks had to be lowered uniformly. This was done by an audible signal given by the contractor, whereupon each jack was given one complete revolution. The results were then inspected and when everything was found to be correct another signal was given for an additional revolution. The entire work of lowering the section to the sand cushion took almost exactly one-half hour. The interest shown by the employees, who were volunteers from the various departments of the company, was evidenced in the ready response to all to assist who could be spared from their regular line of duty, and even the girl employees, who were dressed in their usual Saturday afternoon finery, volunteered to the number of more than fifty. The personal interest of the employees taken in the various phases of the company business, whether in their own department or not, is characteristic of Kings County Lighting Company.

The erection of this holder, which is the largest that can be accommodated on a standard 200 foot city block, without going to an extreme height, and which was designed especially for the Metropolitan District by the Bartlett Hayward Company of Baltimore, is only one of the many big improvements that have been or are being added from time to time to the facilities of Kings County Lighting Company. This holder will be of a five lift style of the telescopic pattern, with water seals. The pipes leading to and from the holder are 36 inches in diameter.

Other facilities completed or contemplated by the company are the erection of a large booster station at 65th street and Ninth avenue at a cost of $350,000, a new office building at Senator street and Fourth avenue at a cost of $500,000, and the mains, meters and services installed or to be installed during the year will cost approximately $400,000.

It is estimated the new holder will be completed and in operation on December 1.

Easthampton Gas Light Co. to Discontinue Making Gas

The Easthampton Gas Light Co. of Easthampton, Mass., will discontinue making gas and gas will be furnished from the plant of the Northampton Gas Light Co. plant. It will be necessary to lay approximately six miles of high pressure main. Work on the pipe line has started and no doubt will be completed by October 1.

New Installations

The Northampton Gas Light Co. of Northampton, Mass., is installing an 8 ft. backrun water gas set. An addition to the present waster gas building is also under construction.

Connersville Blower Co. Enlarges Plant

The Connersville Blower Co. recently let the contract for the erection of an addition to their machine shops. This new building, which will be of brick and steel construction, similar to the older portion of the shop, will be 120 feet long by 100 feet wide, making the total length of this one room 620 feet.

This additional space will enable them to give the usual service on orders for gas pumps, blowers and rotary pumps as well as on their rotary displacement meters.

Allentown-Bethlehem Gas Co. to Improve Plant

The U. G. I. Contracting Co., of Philadelphia, has lately received a contract to do extensive work for the Allentown-Bethlehem Gas Co. at its plant at Didier, Pa. The work will include the furnishing and installing of a compressor plant having a capacity of 50,000 cu. ft. per hour. Also additional condenser equipment and necessary piping and connections.

Gas Company Official Dies

Charles Sommerville French died at his home at 1502 Avenue E, Galveston, Texas, July 14. He was born and reared in Galveston and was secretary-treasurer of the Galveston Gas Co. for about 30 years. He is survived by his wife, Mrs. Byrd S. French; one daughter, Mrs. Howard Eager, wife of Major Howard Eager of West Point; his mother, Mrs. A. F. French; one brother, Frank B. French of Oklahoma City, and two grandchildren.

Increase Made in Gas Service

In order to take care of the rapidly increasing demands for gas service, and in anticipation of the heavy winter demands, the Pacific Gas & Electric Co. is installing at the Sacramento gas plant a 175,000 cubic foot per hour motor driven compressor, including necessary pumping and electrical equipment.

In making this announcement, E. W. Florence, division manager of the company, states:

"There are now 16,879 gas consumers supplied from the Sacramento plant. A high pressure main operates from this plant supplying Davis, Woodland and intervening territory. We have at present installed at the plant an electrically driven compressor and a steam driven compressor, either of which would be sufficient to take care of a peak demand should one fail.

Conneaut to Have Manufactured Gas

The Northeastern Oil & Gas Co. of Conneaut, Ohio, have placed order with the Gas Machinery Co. of Cleveland, Ohio, for compressing, metering, distribution and auxiliary equipment to be installed in Ashtabula, Ohio.

This equipment will deliver coal gas to the consumers of the Northeastern Oil & Gas Co. located in Conneaut, Geneva and Jefferson, Ohio, as well as in the adjacent territory thereto, to give the consumers in this district an efficient and continuous supply of manufactured gas.

Mr. F. B. Dunn, president of the Northeastern Oil & Gas Co., has arranged for this supply of coal gas which will provide the best of service along the most modern lines.

Gas Co. to Sell Common Stock

The Pacific Gas & Electric Co., one of the first big companies to sell stock to its customers, the customer ownership idea, will soon offer $5,000,000 of new common stock to its customers, the directors of the company and the California Railroad Commission having given their approval. The money received is to be used in enlargements, more than $4,000,000 worth of new business and of a continuing character having been garnered during 1923.

Correction

In the Bartlett Hayward's advertisement which appeared in the July 26 and August 2 issues of the American Gas Journal, the heading under the illustration read "700,000,000 cubic feet per day." This should have been "70,000,000 cubic feet per day."

Gas Co. to Issue $67,000 in Bonds

Indianapolis, Ind.—The Public Service Commission has authorized the Indianapolis Gas Co. to issue $67,000 in bonds and turn the securities over to the Citizens' Gas Co. for sale at not less than 80 per cent of par. Proceeds from sale of the bonds will be used to reimburse the Citizens' Company for capital additions to the plant of the Indianapolis company.

Gas Company Sold

Announcement was made recently that the entire capital stock of the Grand Island Gas Co. had been acquired by the Central Power Co., of Grand Island, Neb. The merger of the two properties will soon be made, bringing another property under the control of the Middle West Utilities Co.

Bridgeton Gas Co. Elects Officers

Directors were re-elected at the annual meeting of the stockholders of the Bridgeton Gas Light Co., which was held recently. Following the stockholders' meeting the directors organized.

Harry H. Hankins was chairman of the stockholders' meeting. Joseph H. Powell was judge of election and the tellers were former Councilman Wilbert M. Bacon and County Counsel Roscoe C. Ward.

The directors chosen were:

Bloomfield H. Minch, Samuel P. Fithian, William C. Mulford, Edward P. Bacon and Henry A. Jorden.

While the polls were open William C. Mulford gave his report as secretary and auditor. The report of President Minch was presented.

At the directors' meeting these officers were re-elected:

President, Bloomfield H. Minch.

Vice-president, Samuel P. Fithian.

Secretary and auditor, William C. Mulford.

Superintendent and treasurer, Jacob B. Jones.

President Minch returned from a trip to Kansas, arriving while the meeting was in progress.